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HYDROGRAPHIC NOTICE.

1895 Suppl [No. 4 OF THE YEAR 1895.]

NOTICE No 1.

RELATING TO

BAY OF BENGAL PILOT.

(SECOND EDITION, 1892.)

PUBLISHED BY ORDER OF THE LORDS COMMISSIONERS OF THE ADMIRALTY

LONDON:

PRINTED FOR THE HYDROGRAPHIC OFFICE ADMIRALTY,
By DARLING & SON, LTD., 1, 2, 3 & 5, GREAT ST. THOMAS APOSTLE, E.C. 3

AND SOLD BY

J. D. POTTER, AGENT FOR THE SALE OF ADMIRALTY CHARTS,
31, POULTRY, AND 11, KING STREET, TOWER HILL.

1895.

Price Sixpence.

Dep. U. of C.
L. B.

C. L. May 31/95

HYDROGRAPHIC NOTICE.

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1895.

Price Sixpence.

HYDROGRAPHIC NOTICE

[No. 1 of the Hydrographic Series]

NO. 1

1880

BY OF BEZEL PLOT.

25000 FATHOMS

THE HYDROGRAPHIC SURVEY OF THE ATLANTIC OCEAN

1880

PUBLISHED BY THE HYDROGRAPHIC OFFICE, WASHINGTON, D. C.

BY JAMES W. WALKER, U. S. NAVY, AND J. W. WALKER, U. S. NAVY.

1880

U. S. NAVY, WASHINGTON, D. C.

U. S. NAVY, WASHINGTON, D. C.

1880

U. S. NAVY

806
11791

The existence of this Hydrographic Notice is to be entered on the opening page of Bay of Bengal Pilot. The information in it is to be carefully considered.

One of the copies is to be cut up, and inserted in the pages affected of the book. The other copy is to be retained intact, for reference.

Hydrographic Notice.

(NO. 4 OF THE YEAR 1895.)

For latest information respecting lights the Seaman is referred to Admiralty List of Lights. Part 6.

This List is published early in the current year corrected to preceding 31st December.

SO 11791*

cancels all Notices to Mariners relating to the above work, including No. 166 of 1895.

(All bearings are Magnetic. Variation in 1895.)

Colombo	-	-	$3\frac{1}{4}^{\circ}$ Easterly.	Akyab	-	-	$2\frac{3}{4}^{\circ}$ Easterly.
Madras	-	-	$1\frac{1}{4}^{\circ}$ „	Rangoon	-	-	$2\frac{3}{4}^{\circ}$ „
Vizigapatam	-	-	$2\frac{1}{4}^{\circ}$ „	Port Blair	-	-	$2\frac{1}{4}^{\circ}$ „
Calcutta	-	-	$2\frac{3}{4}^{\circ}$ „	Jimkseylon	-	-	2° „

UNIFORM SYSTEM OF BUOYAGE.—The following p. 37. Uniform System of buoyage was adopted for Indian waters in 1892, and is still in course of being carried out. The ports where it is completed will be found at their respective pages.

SO 11791—2000—2/95 Wt 23675 D & S.

HYDROGRAPHIC NOTICE

[No. 1000, 1892]

NO. 1000

1892

BY THE BUREAU OF THE

NAVY DEPARTMENT

WASHINGTON: GOVERNMENT PRINTING OFFICE: 1892

NO. 1000

PRINTED BY THE GOVERNMENT PRINTING OFFICE

WASHINGTON: GOVERNMENT PRINTING OFFICE: 1892

NO. 1000

PRINTED BY THE GOVERNMENT PRINTING OFFICE

WASHINGTON: GOVERNMENT PRINTING OFFICE: 1892

NO. 1

1892

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This List is published early in the current year
corrected to preceding 31st December.

HYDROGRAPHIC NOTICE

No. 1200

THE UNITED STATES OF AMERICA
NAVY DEPARTMENT

WASHINGTON, D. C.
1900

THE UNITED STATES OF AMERICA
NAVY DEPARTMENT
WASHINGTON, D. C.
1900

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Hydrographic Notice.

(No. 4 OF THE YEAR 1895.)

NOTICE No. 1.

RELATING TO

BAY OF BENGAL PILOT.

(SECOND EDITION, 1892.)

The information contained in this Notice is derived principally from recent surveys by the Officers of the Marine Survey of British India; from publications by the Government of India; and from reports by Officers of H.M. Ships.

The several paragraphs follow the order of the paging of the Bay of Bengal Pilot, 1892, the pages referred to are given herein, in the margin.

This Notice contains all information that has been published by the Admiralty since the issue of the Bay of Bengal Pilot, 1892. It cancels all Notices to Mariners relating to the above work, including No. 166 of 1895.

(All bearings are Magnetic. Variation in 1895.)

Colombo	-	-	$\frac{3}{4}^{\circ}$ Easterly.	Akyab	-	-	$2\frac{3}{4}^{\circ}$ Easterly.
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Vizigapatam	-	-	$2\frac{1}{4}^{\circ}$ „	Port Blair	-	-	$2\frac{1}{4}^{\circ}$ „
Calcutta	-	-	$2\frac{3}{4}^{\circ}$ „	Jimkseylon	-	-	2° „

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SO 11791—2000—2/95 Wt 23675 D & S.

The information contained in this Notice is derived principally
 from a series of the records of the Marine Survey of British
 naval vessels, and is not intended to be a complete and
 accurate statement of the facts. It is published for the
 information of the public, and is not to be used as a
 basis for any legal proceedings.

THE MARINE SURVEY

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BAY OF BENGAL PILOT

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UNIFORM SYSTEM OF BUOYAGE.—The following
 information is given for the purpose of enabling mariners to
 and is still in force of a more recent date. The form where it is
 completed will be found in the margin of this page.

20 1750—5000—10000—15000—20000—25000—30000—35000—40000—45000—50000—55000—60000—65000—70000—75000—80000—85000—90000—95000—100000

SYSTEM OF BUOYAGE.

The system is as follows :—

p. 37.

1. The Mariner, when approaching the coast, must determine his position on the chart, and must note the direction of the main stream of flood tide.

2. The term *Starboard Hand* shall denote that side which would be on the right hand of the Mariner, either going with the main stream of flood, or entering a harbour, river, or estuary from seaward ; the term *Port Hand* shall denote the left hand of the Mariner under the same circumstances.

3. Buoys showing the pointed top of a cone above water shall be called *Conical*, and shall always be *Starboard Hand* buoys, as above defined.

4. Buoys showing a flat top above water shall be called *Can*, and shall always be *Port Hand* buoys, as above defined.

5. Buoys showing a domed top above water shall be called *Spherical*, and shall mark the ends of *Middle Grounds*.

6. Buoys having a tall central structure on a broad base shall be called *Pillar* buoys, and like other special buoys, such as *Bell* buoys, *Gas* buoys, *Automatic Sounding* buoys, etc., etc., shall be placed to mark special positions, either on the coast or in the approaches to harbours, etc.

7. Buoys showing only a mast above water shall be called *Spar* buoys.

8. *Starboard Hand* buoys shall always be painted a single red colour.

9. *Port Hand* buoys shall be painted of another characteristic colour, either black or parti-colour.

10. *Spherical* buoys at the ends of *Middle Grounds* shall always be distinguished by horizontal stripes of white colour.

11. Surmounting topmarks, such as staff and cone, etc., shall always be painted of one dark colour.

12. Staff and Cone shall only be used on *Starboard Hand* buoys ; Staff and Cylinder on *Port Hand* ; Globes at the outer ends of *Middle Grounds* ; and Half Globes, round part uppermost, at the inner ends.

13. Buoys on the same side of a channel, estuary, or tideway, may be distinguished from each other by names or consecutive numbers or letters, commencing from seaward, and when necessary by a staff, surmounted by the appropriate topmark.

14. *Fairway* buoys shall always be painted in horizontal stripes of **P. 37.** white colour, and shall be surmounted by a staff only.

15. Buoys intended for mooring, etc., may be of shape or colour according to the discretion of the Authority within whose jurisdiction they are laid, but for marking Submarine Telegraph Cables the colour shall be green, with the word *Telegraph* painted thereon in white letters.

Buoying and marking of Wrecks :—

16. Wreck buoys in the open sea, or in the approaches to a harbour, or estuary, shall be coloured green, with the word *Wreck* painted in white letters on them.

17. When possible the buoy shall be laid near to the side of the wreck next to mid-channel.

18. When a wreck-marking vessel is used, it shall, if possible, have its top sides coloured green, with the word *Wreck* in white letters thereon, and shall exhibit :—

By day :—Three balls on a yard 20 feet above the sea, two placed vertically at one end, and one at the other, the single ball being on the side nearest to the wreck.

By night :—Three *fixed white* lights, similarly arranged, but not the ordinary riding light.

19. In narrow waters, or in rivers, harbours, etc., under the jurisdiction of Local Authorities, the same rules may be adopted, or, at discretion, varied as follows :—

When a wreck-marking vessel is used, she shall carry a yard on a mast, with two balls by day, placed horizontally, not less than 6 nor more than 12 feet apart, and *two* lights by night, similarly placed.

When a barge or boat only is used a flag or ball may be shown in the daytime.

The position in which the marking vessel is placed, with reference to the wreck, shall be at the discretion of the Local Authority having jurisdiction.

Tides.—It is high water, full and change, at Colombo at 1h. 50m. **P. 48.**

Tides.—It is high water, full and change, at Point de Galle at **P. 50.** 2h. 3m.

[illegible]

off to this side of the road behind the house, and W in the driveway, and the car in the garage.

By the time the *Albatross* was launched, the two other ships had been ordered to leave the sea area. The *Albatross* was the only ship that remained in the area.

and *Deogratias glauca* (a href="http://www.biodid.org/Deogratias-glauca.html">http://www.biodid.org/Deogratias-glauca.html)
 and *Deogratias glauca* (a href="http://www.biodid.org/Deogratias-glauca.html">http://www.biodid.org/Deogratias-glauca.html)

in the case of the 2×2 matrix, the same result is obtained by direct calculation.

Let $\mathbf{A}$ be a $n \times n$ matrix and $\mathbf{B}$ be a $n \times m$ matrix. Then $\mathbf{A}\mathbf{B}$ is a $n \times m$ matrix. The product $\mathbf{A}\mathbf{B}$ is defined as the matrix whose i -th row is the dot product of the i -th row of $\mathbf{A}$ and the columns of $\mathbf{B}$.

words of your kind to lift a poor orphaned boy out of misery.

[illegible]

Traces of the same material were found in the same

997 of 1000 (99.7%) of the 1000 samples were correctly classified.

Matura river—Beacon.—A high white obelisk stands near the p. 64.
beach, eastward of the entrance to Matura river.||

LITTLE BASSES—Rock near.—In 1893 the steam-vessel p. 71.
Capella, of about 22 feet draught, touched lightly on an obstruction,
supposed to be a sunken rock, lying with Little Basses lighthouse
bearing about S. 52° W., distant 3 miles ; but the position is doubtful.

The above information also requires verification, but as the
neighbourhood of the Basses is rocky, and has only been partially
examined, and currents there are often strong and variable in
direction, it is advisable to steer a course to pass well outside the
Basses.*

H.U.
N.M. 44-93
8917

Kal Kuda—Beacons.—The beacons situated about a mile south- p. 83
ward of Vendelus point are elevated 60 feet ; and those a quarter of
a mile eastward of the Rest-house are elevated 45 feet. In other
respects they are as described in Bay of Bengal Pilot, 1892.*

TRINCOMALI BAY.—Munayai Paru, consisting of large p. 85.
boulders, is nearly a cable in length, N.E. by E. and S.W. by W., and
a third of a cable in breadth, with a least depth of 16 feet on it, and
8 fathoms close to. From the shoal Foul point lighthouse bears
S.S.E. $\frac{1}{2}$ E., distant $9\frac{3}{4}$ cables.†

Grommet rock has been blasted, and has now a depth of one p. 89.
foot over it at low water. A white buoy has been placed on the
northern side of the rock.§

Tides.—It is high water, full and change, at Trincomali at p. 89.
9h. 23m.

Kankasentorai—Light.—See Light List.

p. 95.

JAFNAPATAM—Beacons in approach.—A white stone p. 98.
beacon, about 30 feet high, has been erected on the south-east end of
Delft island, as a trigonometrical survey mark. Similar beacons
have been erected on the south-east coast of Pungre Tivo ; on
Kalmoeene point ; and on north coast of Paale Tivo.

An obelisk, from which it is proposed to exhibit a *green* light, has
been erected on the west side of the southern entrance to the boat
channel leading to Jafnapatam, in lat. 9° 37' 40" N., long. 80° 0' 10" E.‡

|| Lieutenant J. A. Tuke, H.M.S. *Boadicea*. See chart, No. 813.

* See Admiralty charts :—Nos. 828, 813.

† See Admiralty plan :—Harbour and bays of Trincomali, No. 815.

§ See charts, Nos. 815, 816.

‡ See Admiralty chart :—Palk strait and gulf of Manar, No. 68a.

the first of these is the fact that the United States is a young nation, and that its history is therefore a history of growth and development.

The second of these is the fact that the United States is a nation of immigrants, and that its history is therefore a history of the struggle for the rights of the immigrant. The third of these is the fact that the United States is a nation of free men, and that its history is therefore a history of the struggle for the rights of the free man. The fourth of these is the fact that the United States is a nation of law, and that its history is therefore a history of the struggle for the rights of the law.

The fifth of these is the fact that the United States is a nation of progress, and that its history is therefore a history of the struggle for the rights of progress. The sixth of these is the fact that the United States is a nation of peace, and that its history is therefore a history of the struggle for the rights of peace.

The seventh of these is the fact that the United States is a nation of justice, and that its history is therefore a history of the struggle for the rights of justice. The eighth of these is the fact that the United States is a nation of liberty, and that its history is therefore a history of the struggle for the rights of liberty.

The ninth of these is the fact that the United States is a nation of truth, and that its history is therefore a history of the struggle for the rights of truth. The tenth of these is the fact that the United States is a nation of goodness, and that its history is therefore a history of the struggle for the rights of goodness.

The eleventh of these is the fact that the United States is a nation of beauty, and that its history is therefore a history of the struggle for the rights of beauty. The twelfth of these is the fact that the United States is a nation of wisdom, and that its history is therefore a history of the struggle for the rights of wisdom.

The thirteenth of these is the fact that the United States is a nation of power, and that its history is therefore a history of the struggle for the rights of power.

The fourteenth of these is the fact that the United States is a nation of glory, and that its history is therefore a history of the struggle for the rights of glory. The fifteenth of these is the fact that the United States is a nation of honor, and that its history is therefore a history of the struggle for the rights of honor. The sixteenth of these is the fact that the United States is a nation of respect, and that its history is therefore a history of the struggle for the rights of respect. The seventeenth of these is the fact that the United States is a nation of love, and that its history is therefore a history of the struggle for the rights of love. The eighteenth of these is the fact that the United States is a nation of hope, and that its history is therefore a history of the struggle for the rights of hope. The nineteenth of these is the fact that the United States is a nation of faith, and that its history is therefore a history of the struggle for the rights of faith. The twentieth of these is the fact that the United States is a nation of charity, and that its history is therefore a history of the struggle for the rights of charity.

The twenty-first of these is the fact that the United States is a nation of kindness, and that its history is therefore a history of the struggle for the rights of kindness. The twenty-second of these is the fact that the United States is a nation of gentleness, and that its history is therefore a history of the struggle for the rights of gentleness. The twenty-third of these is the fact that the United States is a nation of meekness, and that its history is therefore a history of the struggle for the rights of meekness. The twenty-fourth of these is the fact that the United States is a nation of mildness, and that its history is therefore a history of the struggle for the rights of mildness. The twenty-fifth of these is the fact that the United States is a nation of sweetness, and that its history is therefore a history of the struggle for the rights of sweetness.

Tides.—It is high water, full and change, at Pamban at 1h. 48m. p. 105

Tondi—Light.—*See* Light List. p. 107.

Landmarks.—A church spire, situated about 1,000 feet north-westward of Negapatam lighthouse, is a conspicuous object from seaward.* p. 110.

Tides.—It is high water, full and change, at Negapatam at 9h. 0m. p. 111.

CUDDALORE—Buoy.—An iron buoy, painted red, has been moored in a depth of $5\frac{1}{2}$ fathoms with Cuddalore flagstaff bearing N.W. by W. $\frac{1}{4}$ W.† p. 116.

MADRAS.‡—The coast near Madras is studded with casuarina trees. Among the conspicuous buildings in the town are the Native college, Senate house, Museum, St. Andrews church, Law courts, and the Post office. The Coom, a small and sluggish river, flows through the town and enters the sea southward of fort George; its mouth is closed during the cold season. The Port office, Consular Agencies, and the offices of the principal merchants and shipping firms face the harbour. p. 121.

LIGHTS.—Madras new light is a *double flashing white* light, giving *two flashes every half minute* in the following order:—Flash about *two seconds*; eclipse about *three seconds*; flash about *two seconds*; followed by an eclipse of *twenty-three seconds*. It is elevated 166 feet above high water, and visible in clear weather from the bearing of N. by E., through west, to S. by W., a distance of 20 miles. p. 122.

The main tower of the Law courts, from which the light is shown, is an octagonal structure of brick and stone, with a gilded dome, situated N. 18° W., 287 feet from the old lighthouse. Approximate position, lat. $13^{\circ} 5' 15''$ N., long. $80^{\circ} 17'$ E.

The old light has been discontinued and it is intended to dismantle the old lighthouse as soon as possible.

* *See* plan of Negapatam on chart. No. 71*d*.

† Madras Notice, No. 9 of 1893. *See* chart, No. 71*d*.

‡ *See* plan of Madras roadstead on chart, No. 71*c*. New information from remarks by Commander C. F. Oldham, R N., in charge of Marine Survey of India.

MADRAS HARBOUR.—The breakwaters were completed in p. 122. 1894. The high water coast line southward of the south breakwater is advancing seaward yearly, while to the northward the shore is being washed away, except where protected by stones. The harbour was re-dredged in 1893.

The screw pile pier is 1,000 feet in length, with a depth of $3\frac{1}{4}$ fathoms at its extremity, and only cargo and passenger boats are allowed to lie alongside.

Vessels are moored in the harbour according to the season of the year and prevailing wind, with two anchors ahead, and the stern secured to a buoy.

Regulations.—No vessel is allowed to enter or leave the harbour p. 123. between the hours of 6 p.m. and 6 a.m., without special authority.

Buoys.—The southern buoy at the harbour entrance is painted black, and moored just north of the inside bend of the southern breakwater; the northern buoy is painted red, and moored just south of the inside bend of the northern breakwater.

Anchorage.—Large vessels should anchor in a depth of p. 124. $9\frac{1}{2}$ fathoms, and vessels should not come into less than that depth at night.

DIRECTIONS.—Kettle Bottom hill is in lat. $13^{\circ} 26' N.$, the southernmost hill of the Pulicat range, and about 33 miles westward of Pulicat lighthouse.

Tides.—It is high water full and change at Madras at 9h. 1m.

TIME SIGNAL.—The semaphore on the Port Officer's flagstaff p. 125. is now dropped at 1h. p.m., Madras mean time, corresponding to 19h. 39m. 0.6s. Greenwich mean time. When the semaphore fails to drop, or is dropped incorrectly, the signal C.V.N.J. (*failed*) of the Commercial code is hoisted immediately, and kept flying for half an hour. When this is the case, the semaphore is dropped again at 2h. p.m., Madras mean time, corresponding to 20h. 39m. 0.6s. Greenwich mean time.

In addition to the above signal a gun is fired by electricity from a battery near the lighthouse at noon, Madras mean time, and at 8h. p.m.

See chart, No. 71c.

Wind, weather, and current.—The following table of wind, p. 125. weather and current prevalent on the Coromandel coast applies more particularly to the neighbourhood of Madras :—

Months.	Wind.	Force.	Current.	Force.	Remarks.
January ..	N. E., E. N. E., veering to E.	Steady and fresh.	South - west-erly or northerly.	1 to 1½ knots.	Currents irregular in direction.
February ..	N. E., veering to S. E. and South.	Light ..	Northward ..	1½ knots.	Current runs parallel to coast.
March and April.	S. S. E. to S. S. W., decreasing at sunset, and succeeded by land winds from S. W. to W. N. W.	Strong .. Not strong or steady.	North-easterly, following the direction of coast.	1 to 3 knots at times.	In April squalls occasionally from the N. W.
May	South to S. W., veering towards the land at night.	Not strong or steady.	Do.	1 to 2 knots.	Next to October the most dangerous month in the bay. The barometer should be watched especially if the wind sets in at N. N. W., veering to North. At night (early part) squalls off the land from N. W.
June	S. S. W. and W.	Steady and increasing.	Variable some-times to the southward.	Weak ..	Weather fairly settled near Madras, if wind veers to the northward watch the barometer.
July and August.	S. S. W. to W. with rain and overcast sky.	Strong ..	S. W. or against the wind.	2 to 3 knots at times.	By keeping in shore in July and August vessels from north to south have made good passages.
September	S. S. W. to W.	Decreasing in strength.	South and S. S. W.	Strong ..	In September N. E. winds sometimes for two or three days together.
October ..	Light and variable.	Light ..	Southerly and along the coast.	Do. ..	October an uncertain month, liable to cyclones. A very low barometer does not always accompany strong winds. A stormy sky should not pass unheeded.
November and December.	N. E. winds prevail; commencement of N. E. monsoon.	Strong and steady.	S. W. and South along the coast.	Strong, 2 to 4 knots.	November and early in December unsettled. Caution necessary. Hurricanes and cyclones often occur in November, and in even early December.

STORM SIGNALS.—Flag L of the International Code when hoisted at the northern arm of the Port Office flagstaff signifies that cyclonic weather prevails on the coast between Masulipatam and Gopalpur; when hoisted at the southern arm it signifies that cyclonic weather prevails in the vicinity of Negapatam. pp. 126, 127.

The Warning Signal.— By day *a ball*, or at night *three white*

See chart, No. 71c.

With a view to the fact that the above-mentioned conditions are not satisfied in the case of a general function f , we shall now consider the case of a function f which is a solution of the differential equation

$$f'' + p(x)f' + q(x)f = 0, \quad (1)$$

where $p(x)$ and $q(x)$ are continuous functions of x in the interval (a, b) .

Let $f_1(x)$ and $f_2(x)$ be two linearly independent solutions of (1) in the interval (a, b) .

Let $W(x)$ be the Wronskian of $f_1(x)$ and $f_2(x)$ in the interval (a, b) .

Let $h(x)$ be a function which is continuous in the interval (a, b) and which satisfies the condition

$$h(x) > 0 \quad \text{for all } x \text{ in } (a, b). \quad (2)$$

Let $g(x)$ be a function which is continuous in the interval (a, b) and which satisfies the condition

$$g(x) > 0 \quad \text{for all } x \text{ in } (a, b). \quad (3)$$

Let $u(x)$ be a function which is continuous in the interval (a, b) and which satisfies the condition

$$u(x) > 0 \quad \text{for all } x \text{ in } (a, b). \quad (4)$$

Let $v(x)$ be a function which is continuous in the interval (a, b) and which satisfies the condition

$$v(x) > 0 \quad \text{for all } x \text{ in } (a, b). \quad (5)$$

Let $w(x)$ be a function which is continuous in the interval (a, b) and which satisfies the condition

$$w(x) > 0 \quad \text{for all } x \text{ in } (a, b). \quad (6)$$

Let $z(x)$ be a function which is continuous in the interval (a, b) and which satisfies the condition

$$z(x) > 0 \quad \text{for all } x \text{ in } (a, b). \quad (7)$$

Let $\phi(x)$ be a function which is continuous in the interval (a, b) and which satisfies the condition

$$\phi(x) > 0 \quad \text{for all } x \text{ in } (a, b). \quad (8)$$

Let $\psi(x)$ be a function which is continuous in the interval (a, b) and which satisfies the condition

$$\psi(x) > 0 \quad \text{for all } x \text{ in } (a, b). \quad (9)$$

Let $\chi(x)$ be a function which is continuous in the interval (a, b) and which satisfies the condition

$$\chi(x) > 0 \quad \text{for all } x \text{ in } (a, b). \quad (10)$$

lights, placed vertically, indicate that a cyclonic storm has formed, which will probably advance to the part of the coast on which the port is situated, but is still at a considerable distance from it. On the warning signal being hoisted, Commanders of vessels at anchor within the limits of the port are required to attend to the following directions :—

- (a.) Not to be absent from their respective vessels between sunset and sunrise.
- (b.) To keep their respective vessels prepared in every respect to proceed to sea at short notice.
- (c.) To leave the harbour without waiting for instructions to do so should they deem such a prudent course.

The Danger Signal.—By day *a drum*, or at night *two white* lights, placed vertically, indicate that a storm is approaching that part of a coast on which the port is situated, and will shortly cross it.

On the danger signal being hoisted, the Commander of each vessel will take such measures for securing the safety of his vessel as he may consider requisite ; no further instructions on that point will be furnished by the Port authorities. Should his vessel be inside the harbour, he is to proceed outside at once, without waiting for a special signal to do so.

Intensity of the storm and direction of its advance.—The warning and danger signals, according as they are hoisted at the northern or southern arm of the yard of the Port flagstaff, indicate that the storm is expected to strike the coast to the north or south of the port, and when hoisted at the gaff attached to the flagstaff, that the centre of the storm is expected to pass over the port.

The intensity of the storm will be indicated during daylight by additional balls, of a size half the diameter of the ball used as a warning signal, hoisted at the same yard arm as the warning or danger signal, but *between* it and the flagstaff in the case of a storm to the north or south of the port, and by these balls hoisted *over* the warning or danger signal when the storm is expected to pass over the port ; thus one small ball will indicate a storm of slight intensity, two small balls a storm of considerable intensity.

A small ball hoisted *under* the day warning or danger signal, and a *red light* at night at the opposite yard-arm to that at which the warning or danger signal may be displayed, will indicate that vessels are to leave the harbour at once.

* See chart, No. 71c.

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lights, placed vertically, indicate that a vessel is approaching the port which will probably advance to the east or the west of the port is situated, but is still at a considerable distance from the port, the warning signal being hoisted. When a vessel is within the limits of the port are required to attend to the following directions:—

- a.) Not to be absent from their respective posts between sunset and sunrise.
- b.) To keep their respective posts open until a vessel has been signalled to proceed to sea at short notice.
- c.) To leave the harbour with the vessel as directed, and do so should they deem it necessary.

The Danger Signal.—By day, a red flag, and at night, a red light, placed vertically, indicate that a vessel is approaching the port of a coast on which the port is situated, and the vessel is to be signalled.

On the danger signal being hoisted, the vessel will take such measures for securing the vessel as may be considered requisite: no further instructions are to be given, except those furnished by the Port authorities. Should a vessel be signalled to leave the harbour, he is to proceed outside at short notice, and when a special signal is to be so.

Intensity of the storm and direction of the wind.

The warning and danger signals, according to the direction of the northern or southern arm of the yard, indicate that the storm is expected to strike the coast, and when hoisted at the gaff indicate that the centre of the storm is expected to pass over the port.

The intensity of the storm will be indicated by the number of additional balls, of a size half the diameter of the ball of the warning signal, hoisted at the same yard, and the flagstaff of the danger signal, but between it and the flagstaff, and by the direction of the wind to the north or south of the port, and by the direction of the wind, the warning or danger signal when the storm is expected to strike the port; thus one small ball will indicate a storm of considerable intensity, two small balls a storm of considerable intensity.

A small ball hoisted under the day warning signal, or a red light at night at the opposite yard-arm, or a red light at night at the opposite yard-arm, may be displayed, and the vessel is to leave the harbour at once.

[illegible]

from 7000 to 10000 years BP, and the last glacial period from 10000 to 12000 years BP.

Project Zephyr will be a 100,000 sq ft, 10-story office building with 100,000 sq ft of parking garage, located in the downtown area of the City of San Francisco. The project is currently in the design phase and is expected to be completed in 2015.

of the $\mathcal{H}^1$ -norm. The $\mathcal{H}^1$ -norm is defined as

The authors are grateful to the referees for their valuable comments and suggestions.

—The Government will be glad to discuss the matter with the Government of the United States, but it is not in a position to do so at the present time. The Government is at present engaged in a process of reorganization, and it is not possible to discuss the matter at the present time. The Government is at present engaged in a process of reorganization, and it is not possible to discuss the matter at the present time.

The first of these is the fact that the system is not a simple one, and that the results are not always as expected. For example, the system may be too complex to handle, or the results may be too difficult to interpret. This is why it is important to have a good understanding of the system and its components, and to have a good understanding of the results and how to interpret them.

has made a number of interesting observations. In the first place, T and α are independent of the number of molecules per unit area, and in the second place, the values of T and α are independent of the number of molecules per unit area, and in the third place, the values of T and α are independent of the number of molecules per unit area.

$$f_{\alpha}(t) = \frac{1}{\Gamma(\alpha)} \int_0^t (t-s)^{\alpha-1} f(s) ds, \quad \alpha > 0, \quad t \in \mathbb{R}_+,$$

Ship Signals.—Vessels entering the harbour are to hoist the flag F at the fore, and when leaving the flag N. pp. 126, 127.

Boat Signals.—Flag H of the International Code at the main is the signal for a doctor; the Union Jack under the red ensign, or at night, three white lights hoisted vertically at the peak, for the police boat; flag D at main, for an accommodation boat.

Population of Madras in 1891 was 452,518.

p. 128.

The Coast.—There are several fishing villages on the coast and a fairly conspicuous white native temple is situated about $3\frac{1}{2}$ miles south of Ennore beacon.

ENNORE.—The bungalows at this place are now seldom used by Europeans.

Ennore beacon is on a sand spit on the south side of the entrance to Ennore backwater. In the afternoon the gap in the trees caused by that entrance is the best guide to the locality. pp. 128 129.

Anchorage off Ennore is in $6\frac{1}{2}$ to 7 fathoms, one mile off-shore, with Ennore beacon bearing N.W. $\frac{1}{2}$ W. p. 129.

The Coast.—Inland, distant about 30 miles from the coast, is a conspicuous range known as the Pulicat hills, the highest part of which, Kambakam Durgan, is situated about the middle of the range and is 2,546 feet in height. At the southern extremity of the range is a remarkable flat-topped hill known as Kettlebottom hill, which bears nearly due west from Pulicat lighthouse. About 4 miles N.E. $\frac{1}{2}$ N. from Kettlebottom is another flat-topped hill, jutting out from the range, which viewed from the north-eastward might be mistaken for Kettlebottom. Nagiri Nose, which is only seen in clear weather, lies 10 miles W. by S. $\frac{1}{2}$ S. from Kettlebottom; it is a sharp peak with a crooked summit 2,822 feet in height.

PULICAT.—Pulicat lake is now only 20 miles in length, a large portion of the north end having been reclaimed. Pulicat is generally considered the southern limit where the Telugu language is spoken. The town of Pulicat can be seen from seaward, and a tall monument, just north of the lighthouse, is conspicuous. p. 130

LIGHT.—Pulicat light is elevated 68 feet above high water.

See chart, No. 71c.

NELLORE DISTRICT.—The chief ports are :—Armeghon, p. 130. Krishnapatam, Ramiapatam, Iskapalli and Kottapatam. All the ports of the district were visited by only 45 vessels in 1893.

Point Pudi, a low point composed of sand hills and scattered palms, bears N. by W. about 23 miles from Pulicat lighthouse ; the coast between is low and forms a shallow bight with soundings of 5 and 6 fathoms about half a mile from the beach. The principal entrance to Pulicat lake is situated 2 miles north of the lighthouse ; from here casuarina plantations extend for 11 miles, and then the trees are few and scattered until about one mile to the southward of point Pudi, where there is a conspicuous clump of cocoanut palms on a sand hill about 80 feet above high water.

A wooden beacon, 35 feet above high water, is situated half a mile north of Pulinjerikuppam village in lat. $13^{\circ} 37'$ N. It was erected as a survey mark in 1889, and is not conspicuous.

Point Pudi shoal, a sandy shoal, having over it from one to 3 fathoms, extends for $2\frac{1}{4}$ miles in a S.E. by S. direction, and during rough weather breaks at a distance of a mile from the point. The outer edge of this shoal having depths of 4 fathoms, is distant $2\frac{1}{2}$ miles from the coast.

ARMEGHON or DUGARAZPATAM, where a factory was p. 131. established in 1625, is now a small village, the resort of salt makers. It is situated on an extensive backwater, the entrance to which is in lat. 14° N. and 7 miles from Armeghon lighthouse. Kundur, another small village, is 2 miles to the northward ; they are both connected with the Pulicat lake and Kistnapatam, by the Buckingham canal, and considerable canal boat traffic passes through them during the S.W. monsoon. There is a Post Office and travellers' bungalow at Dugarazpatam.

LIGHT.—A quarter of a mile from the coast, and N.N.W. $\frac{1}{4}$ W. 7 miles from point Pudi, is a white stone column 111 feet in height, from which, at an elevation of 107 feet above the sea, is exhibited a *flashing white* light, showing a flash of about *five seconds* duration every *forty-five seconds*, and visible in clear weather a distance of 15 miles. The light is obscured by trees on bearings north of N.N.W.

the first of these, the *History of the English Language*, is a work of great value, and one which has been long and justly celebrated. It is a work of great value, and one which has been long and justly celebrated.

The second of these, the *History of the English Literature*, is a work of great value, and one which has been long and justly celebrated. It is a work of great value, and one which has been long and justly celebrated. The third of these, the *History of the English Language*, is a work of great value, and one which has been long and justly celebrated. It is a work of great value, and one which has been long and justly celebrated.

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The tenth of these, the *History of the English Literature*, is a work of great value, and one which has been long and justly celebrated. It is a work of great value, and one which has been long and justly celebrated. The eleventh of these, the *History of the English Language*, is a work of great value, and one which has been long and justly celebrated. It is a work of great value, and one which has been long and justly celebrated.

THE HISTORY OF THE
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Armeghon shoal extends from near point Pudi for about p. 131. 15 miles in a northerly direction, with depths over it from $1\frac{1}{4}$ to $4\frac{3}{4}$ fathoms. The south extreme of the shoal lies $1\frac{1}{2}$ miles N.E. by N. from point Pudi. The eastern edge of the shoal lies 6 miles from the coast with the 10-fathoms line only one mile farther eastward. From the shoalest part in $1\frac{3}{4}$ fathoms, which sometimes breaks, Armeghon lighthouse bears N.W. by W. From the broadest part of the shoal, with depths of 2 to 4 fathoms over it, the lighthouse bears West. There is a small channel leading into Blackwood harbour between point Pudi shoal and Armeghon shoal, with depths of 4 to 6 fathoms; it is only half a mile broad and should only be used by small coasting craft.

Directions.—Armeghon lighthouse is the best landmark near Armeghon shoal. Gudali hill, in lat. $14^{\circ} 1' N.$, and about 8 miles inland is a conspicuous flat-topped hill, 297 feet high, with a pagoda near its centre; it is only occasionally visible from the outer part of Armeghon shoal.

The current sometimes entirely reverses its direction.

Directions.—For Miniapolliem lighthouse bears S.W. by S. *read* Armeghon lighthouse bears S.S.W. $\frac{3}{4}$ W., and for Armeghon hill W. $\frac{1}{4}$ S. *read* Gudali hill W. by S. The bottom at the anchorage is coarse sand.

Beacon.—In lat. $14^{\circ} 5' 30'' N.$ is a wooden beacon with cross p. 132. arms; it is situated on a sandy spit, and is quite close to the beach. There is a shallow backwater inside the beacon which extends for 3 miles to the northward and runs parallel to the coast. The beacon is not readily seen except when close to the shore, but there are two conspicuous clumps of casuarinas $1\frac{1}{2}$ miles farther along the coast. In the same latitude as these clumps is the entrance to Swarnamukhi river, which is very narrow and shallow and of no use to boats. The town of Kottapatam is about $1\frac{1}{2}$ miles N.N.W. of the beacon.

Vupatteru or Middi river.—In about lat. $14^{\circ} 15' N.$, and 9 miles from Kottapatam beacon, is the mouth of the Vupatteru river; the entrance, which leads to an extensive backwater, is fairly good and can be used by native craft, of light draught, with safety. Krishnapatam, the chief shipping town of Nellore, the two connected by road, is situated on the north bank of the river, and close to the Buckingham canal.

Anchorage.—Coasting vessels occasionally anchor outside the mouth of the Vupatteru river in $5\frac{1}{2}$ to 6 fathoms about 2 miles from the beach, but this anchorage is only safe during fine weather. p.132.

THE COAST from Vupatteru river to the northward trends N.N.E. to the Shallinger shoal, and is composed of plantations of casuarina trees and sand hills. About 3 miles to the northward of Vupatteru river the casuarina plantations terminate abruptly; then sand hills 30 to 60 feet high continue to the point abreast of Shallinger shoal.

Shallinger shoal, a narrow shoal, having over it depths from $1\frac{1}{2}$ to $2\frac{1}{4}$ fathoms, extends in a N.E. direction $2\frac{1}{2}$ miles from the coast; and in latitude $14^{\circ} 21' N.$, there is a depth of $4\frac{1}{2}$ fathoms at a distance of 3 miles from the shore. The soundings outside the shoal are regular, and the coast may be approached with safety to a depth of 8 fathoms.

The coast from Shallinger shoal trends North for 13 miles to the mouth of the Pennar river, and is low and sandy, with a few casuarina clumps, and other trees, none of which are conspicuous.

Narsimkonda pagoda, situated on a hill 504 feet high, is a white pagoda visible occasionally from the 20-fathoms line, between the bearings of W.N.W. and W.S.W., when looking up Pennar river, but is not very conspicuous.

Pennar river, one of the largest in Southern India, rises in Mysore state, flows eastward through the Karnátik and enters the bay of Bengal in lat. $14^{\circ} 35' N.$ Nellore, the chief town of the district, near which many Europeans reside, is situated on the south bank of the river on rising ground, 11 miles from the coast. From Nellore to the mouth, the Pennar has an average width of three-quarters of a mile, but is useless for navigation as its outlet is so shallow that only native craft can enter, and it is liable to sudden freshets.

The mouth of the river is not easily discerned from seaward, as it enters the sea behind a sandy point, which is only a few feet above water.

Anchorage off the Pennar river may be obtained in fine weather, in from 5 to 7 fathoms, sand and mud, at about $1\frac{1}{2}$ miles from the coast.

Anchorage.—Anchorage is possible in several places, especially in the mouth of the *Perak* river, but the anchorage is only a few miles from the beach, but it is not a very good anchorage.

THE COAST.—The coast is a low, sandy beach, the northern part of it is a continuation of the *Perak* river, and the southern part is a continuation of the *Perak* river. The anchorage is a continuation of the *Perak* river, and the anchorage is a continuation of the *Perak* river.

Shallings.—Shallings is a narrow, sandy beach, lying on a hill, from 11 to 12 miles from the *Perak* river, and is a continuation of the *Perak* river. The anchorage is a continuation of the *Perak* river, and the anchorage is a continuation of the *Perak* river.

The coast from *Shallings* to the north is a low, sandy beach, and the anchorage is a continuation of the *Perak* river, and the anchorage is a continuation of the *Perak* river.

Narathorn.—Narathorn is a low, sandy beach, lying on a hill, from 11 to 12 miles from the *Perak* river, and is a continuation of the *Perak* river. The anchorage is a continuation of the *Perak* river, and the anchorage is a continuation of the *Perak* river.

The river of the *Perak* river is a low, sandy beach, lying on a hill, from 11 to 12 miles from the *Perak* river, and is a continuation of the *Perak* river. The anchorage is a continuation of the *Perak* river, and the anchorage is a continuation of the *Perak* river.

The mouth of the river is a low, sandy beach, lying on a hill, from 11 to 12 miles from the *Perak* river, and is a continuation of the *Perak* river. The anchorage is a continuation of the *Perak* river, and the anchorage is a continuation of the *Perak* river.

Anchorage of the Perak river.—The anchorage is a continuation of the *Perak* river, and the anchorage is a continuation of the *Perak* river.

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Buckingham canal, which runs North from Madras City as far as the delta of the Kistna, skirts the coast of Nellore district at a distance of a few hundred yards to 2 miles inland. It is largely used by the native craft, and their sails or masts may generally be seen over the sand hills on the coast, to the northward of Pennar river. p. 132.

The coast from the mouth of the Pennar river trends nearly N.N.W. for 7 miles, and continues its low and sandy nature; but the casuarina clumps are more continuous, and the trees higher, than to the southward of Pennar river. p. 133.

ISAKAPALLI, situated $8\frac{1}{2}$ miles N.N.W. of the mouth of the Pennar river, may be recognised from seaward by a ridge of moderately high land at the back or westward of it, visible about 20 miles, and a flagstaff at the village on the beach showing over the trees. It is a seaport and custom station.

Formerly a considerable export trade was carried on here but this is now absorbed by the Buckingham canal.

Anchorage may be obtained off Isakapalli in 7 to 8 fathoms, sand and mud, about one mile from the beach, and N.E. of the bungalow situated three-quarters of a mile south of the village.

About 2 miles south of the anchorage off Isakapalli the 10-fathoms line approaches to within $1\frac{1}{2}$ miles of the shore.

Supplies.—A few sheep, fowls, and a small quantity of fish are obtainable; other necessaries can be procured at Nellore, which is 23 miles distant, and connected by a metalled road.

The Coast north of Isakapalli continues its N.N.W. trend to Ramiapatam, is low and sandy, with a short scrub, and no casuarina clump of any size, until $1\frac{1}{2}$ miles South of Wuturpallipalem, where there is a high and large clump of casuarinas.

From Wuturpallipalem to Ramiapatam, there are first a few detached clumps, and then the trees are very even to Ramiapatam.*

A shoal, with a least depth of $2\frac{3}{4}$ fathoms on it at low water, lies 2 miles from the coast, in lat. $14^{\circ} 54' 35''$ N., long. $80^{\circ} 6' 48''$ E. The bottom in the neighbourhood is uneven, with depths of from 4 to 6 fathoms, hard sand, extending for one mile around the shoalest part.

See Admiralty chart :—Ramiapatam to Narsapur point, No. 1,894.

A shoal, about $2\frac{1}{2}$ cables in extent, with 4 fathoms on it at p. 133. low water, lies 2 miles from the coast, in lat. $14^{\circ} 56' 30''$ N., long. $80^{\circ} 6' 15''$ E. Uneven bottom, with occasional patches of $5\frac{1}{2}$ fathoms, extends $5\frac{1}{3}$ miles in a N. by E. $\frac{1}{4}$ E. direction from this shoal, to lat. $15^{\circ} 1' 40''$ N.

Until north of Ramiapatam the depths should not be shoaled to less than 10 fathoms.

Ramiapatam may be recognised by the high casuarina clumps, and a church, the red spire of which may be seen over the trees. Inland is Tettu temple which is white, and 135 feet above the sea level, but is not very conspicuous.

North of Ramiapatam to the mouth of the Manneru river, the coast is low and sandy, with several detached casuarina clumps.

Singarayakonda temple, on a hill 168 feet high, about $3\frac{1}{2}$ miles inland, is a conspicuous object from seaward, and is the only landmark between Ramiapatam and Kottapatam. A public road leads, from the coast one mile north of Manneru river, past the pagoda to the town of Kandukur. In the neighbourhood of the temple there is some rising ground which is occasionally visible through the casuarinas which fringe the shore.

From Manneru river, the coast which is low and sandy, trends N.N.E. 6 miles to Palar river, and then 8 miles to Kottapatam.

KOTTAPATAM, at which an extensive export trade used to be carried on, lies about one mile from the coast and is connected by a good road with Ongole. Most of the trade with Kottapatam is now carried on through the Buckingham canal, and the godowns on the beach are falling into disrepair.

Beacon.—An obelisk, of a grey colour, 38 feet high, and standing on a sand hill 12 feet high, is situated close to the custom house on the beach at Kottapatam, and is visible from all directions seaward.

Anchorage may be obtained during fine weather in 5 fathoms, p. 134 about $2\frac{1}{2}$ miles from the shore, with the obelisk at Kottapatam bearing W.N.W.

The hills of Konijedu and Kandalur, about 480 feet high, which are connected by a ridge, lie 11 miles West of Kottapatam, and are

A shoal about 2½ miles in extent, with 4 fathoms on it at low water, lies 2 miles from the coast, in lat. 14° 56' 30" N., long. 80° 5' 15" E. The bottom, with occasional patches of coral, extends ½ miles in a N. by E. direction from this shoal, to lat. 15° 1' 40" N.

Until north of Kottatatham no reefs should not be shoaled to less than 10 fathoms.

Rainiaapatain may be recognized by the high cascading clumps and a clinal, the red spots of which may be seen over the reef. Inland is a very simple which is white and 135 feet above the sea level, but is not very conspicuous.

North of Rainiaapatain to the mouth of the Mannar river, the coast is low and sandy, with several smaller cascading clumps.

Singirayakkottai rising on a hill, lies but a few miles inland, is a conspicuous object from seaward, and is the only land mark between Rainiaapatain and Kottatatham. A patch of red lands from the coast runs north of Mannar river, past the point to the town of Kottatatham. In the neighbourhood of the temple there is some rising ground, which is occasionally visited through the cascades which fringe the shore.

From Mannar river to a point which is low and sandy, nearly N. N. E. 6 miles to Kottatatham, and 8 miles to Kottatatham.

KOTTATATAM, at which an extensive export trade used to be carried on, lies about one mile from the coast, and is connected by a good road with Ottapalam. Most of the rock of Kottatatham is now carried on through the Kottatatham canal, and the goods on the beach are taken into this port.

Beacon.—An obelisk of a grey colour, 52 feet high, and standing on a sand hill 12 feet high, is situated close to the custom house on the beach at Kottatatham, and is visible from all directions.

Anchorages may be obtained close to the weather in 5 fathoms, 4, 134

N. N. W.

The district of Kottatatham is about 12 miles high, which are covered by a ridge, 16 miles N. of Kottatatham, and are

good guide to the anchorage. Chimakurti, 21 miles N.W. from p. 134. Kottapatam, is 2,093 feet high, and a conspicuous mark in clear weather. Singarayakonda temple can also be seen from the 10-fathom line when approaching Kottapatam.

Vessels making for the anchorage should not shoal the water to less than 10 fathoms, until one of the landmarks above given has been identified.

Mutapolli bank extends N.E. by E. and S.W. by W., 4 miles; and consists of three patches with less than 5 fathoms water. The least depth, $3\frac{1}{2}$ fathoms, lies E. $\frac{1}{4}$ S., $9\frac{1}{4}$ miles, from Kottapatam beacon. The shoals are formed of hard sand, and are generally marked by overfalls.

From the outer part of Mutapolli bank the low land of the coast is scarcely visible, even in clear weather, and Konijedu and Kandalur hills, which bear nearly due West, are seldom seen, being 23 miles distant.

A shoal, the least depth on which is $1\frac{3}{4}$ fathoms, lies 4 miles N.E. by E. from Kottapatam obelisk, and 2 miles from the coast. It extends N.N.E. and S.S.W. $2\frac{1}{4}$ miles, with a width of one mile. From this shoal, patches, with depths of 3 to 5 fathoms on them, extend for 4 miles towards Mutapolli bank.

A shoal of 5 fathoms, one quarter of a mile in extent, lies $13\frac{1}{2}$ miles from the coast, in lat. $15^{\circ} 29' 45''$ N., long. $80^{\circ} 26' 45''$ E.

Directions.—Mutapolli bank should not be approached nearer than in 14 or 15 fathoms by day, nor 30 fathoms by night, and the lead should be kept going, as the soundings decrease rapidly from 30 fathoms.

KISTNA DISTRICT is the next north to that of Nellore, with a coast line of about 95 miles; the principal ports are Nizampatam and Masulipatam.

THE COAST between Kottapatam and False Point Divi, which bears N.E. by E. $\frac{3}{4}$ E., distant 40 miles, forms a considerable bay with depths under 10 fathoms. There are no dangers in the bay other than those already mentioned near Mutapolli bank, and the coast is safe to approach to depths of 5 fathoms.

of the current with the applied magnetic field, $\mu_0 H$, and the temperature, T , are shown in Fig. 1. The critical temperature, T_c , is about 10 K, and the critical magnetic field, H_c , is about 10 T. The temperature dependence of the critical magnetic field, $H_c(T)$, is shown in Fig. 2. The critical magnetic field, H_c , is about 10 T, and the critical temperature, T_c , is about 10 K.

From the one hand, the $\mathcal{H}^1$ -norm of u is bounded by the $\mathcal{H}^1$ -norm of $\tilde{u}$ and the $\mathcal{H}^1$ -norm of $\tilde{u}$ is bounded by the $\mathcal{H}^1$ -norm of u plus a constant depending on $\tilde{u}$ and $\tilde{u}$ (see [10, Lemma 2.1]).

[illegible][illegible][illegible]

THE COAST RANGERS, who were sent to the coast to look for the missing ship, found the wreck of the *Wendell* on the beach. The ship was in a bad state of decay, and the crew had been killed. The ship was found on the beach, and the crew had been killed.

Gundlakamma river mouth, 6 miles northward of Kottapatam, can only be entered by boats in fine weather. The coast in the neighbourhood, and for 4 miles northward, is low and sandy with but few trees; casuarinas then commence and continue to line the tops of the sand-hills on the coast for 20 miles towards the head of the bay; the trees are about 30 to 40 feet high, and in places extend more than a mile inland. There are three villages along this coast, one of which is a post town.

A boat passage, to a backwater and the Buckingham canal, lies $8\frac{1}{2}$ miles to the northward of Gundlakamma river mouth. The entrance runs N.E. and S.W. across a bar, which has a depth of about 6 feet on it at low water, but is only available for even a ship's boat in fine weather.

From the end of the casuarinas to Nizampatam, a distance of 14 miles, the coast is backed by sand hills 6 to 8 feet high, rising to heights of 20 to 30 feet towards Nizampatam.

NIZAMPATAM, the principal town along this coast, is approached by creeks, in which there is always water enough for boats, and at high water enough water for country brigs. It has a population of 4,000. Fowls and eggs in limited quantities can be obtained, also sheep and fish in abundance, but no vegetables. Paddy is exported to Negapatam and southern ports, timber is occasionally imported from Rangoon, and salt is sent up country by canal. Two Europeans of the Salt Department reside here.

Nizampatam was the first port at which the English commenced trade on the eastern coast of India, in 1611.

Entrance.—The deepest entrance to the creek leading to Nizampatam is opposite a large white sand hill to the east of Dindi house, but there is another channel opposite Dindi house, which can be used by ships' boats at any time but low water springs. West of the entrance and inside is a conspicuous clump about 60 feet high.

Dindi house is a large house on the beach at the entrance to the creek leading to Nizampatam; close to the house is a big tree, the top of which is 67 feet high.

Anchorage may be obtained in 5 fathoms, mud, with Dindi house and tree bearing N. 17° E., distant about 6 miles.

Gundlakamma river mouth 6 miles northward of Kottapattam can only be entered by boats in fine weather. The coast in the neighbourhood, and for 1 mile northward, is low and sandy with but few trees: casuarinas then commence and continue to line the top of the sand-hills on the coast for 50 miles towards the head of the bay; the trees are about 30 to 40 feet high, and in places extend more than a mile inland. There are three villages along this coast, one of which is a post town.

A boat passage to a backwater and the Blackdyam canal, lies 2½ miles to the northward of Gundlakamma river mouth. The entrance runs N.E. and S.W. across a bar which has a depth of about 5 feet on it at low water, but is only available for even a ship's boat in fine weather.

From the end of the entrance to Nizampattam, a distance of 14 miles, the coast is backed by sand hills 6 to 8 feet high, rising to heights of 50 to 60 feet towards Nizampattam.

NIZAMPATAM, the principal town about this coast, is approached by creeks in which there is always water enough for boats, and in high water enough water for country boats. It has a population of 4,000. Fowls and eggs in limited quantities can be obtained, also sheep and fish in abundance, but no vegetables. It is exposed to Nizampattam and southern ports, timber is occasionally imported from Bangkok, and salt is sent in country pyramids. Two branches of the Salt Department reside here.

Nizampattam was the first port at which the English commenced trade on the eastern coast of India, in 1611.

Entrance.—The deepest entrance to the creek leading to Nizampattam is opposite a large white sand hill to the east of Dinah house, but there is another channel opposite Dinah house, which can be used by ships at any time but low water springs. West of the entrance and inside is a conspicuous group about 60 feet high.

Dinah house is a large house on the beach at the entrance to the creek leading to Nizampattam; close to the house is a big tree, the top of which is 57 feet high.

Anchorage may be obtained in 5 fathoms mud, with Dinah house and tree bearing N. 17° E. distant about 6 miles.

2½ miles N. of post.

From Dindi house the coast trends 5 miles E. by S. to the entrance of a creek, navigable by boats, then S.S.E., and South, to False Point Divi. p. 135.

Tides.—It is high water full and change at Nizampatam entrance at 9h. 0m., springs rise $4\frac{1}{3}$ feet, and neaps $3\frac{1}{2}$ feet. The tidal streams are weak and only felt inshore and at springs.

Backwater.—North of False Point Divi is a considerable backwater; it is formed by a long spit, which commencing $2\frac{1}{2}$ miles north of False Point Divi, extends 4 miles northward, enclosing a sheet of water half a mile broad, and leaving an entrance at the north end. This backwater is connected by creeks with the Kistna river.

FALSE POINT DIVI, in lat. $15^{\circ} 43' N.$, long. $80^{\circ} 50' E.$, bears S. $41^{\circ} E.$, distant $12\frac{1}{2}$ miles from Nizampatam river entrance, is low and dangerous, and covered with small mangrove jungle.

Shoal ground, which dries in patches, extends one mile South and 3 miles West of the point.

Caution.—The 5-fathom line lies $4\frac{1}{2}$ miles, and the 10-fathom line $5\frac{1}{2}$ miles, from the coast; the top of the trees being just visible from the 10-fathom line. As the soundings decrease rapidly from the 100-fathom line, vessels in this neighbourhood should keep the lead going and not approach nearer than in 20 fathoms.

Currents.—The current off False Point Divi sets to leeward, according to the monsoon, and parallel to the shore, being strongest towards the 100-fathom line.

Kistna river is entirely useless for navigation, the mouths are too shallow for anything larger than boats to enter; and the river channel is generally too rocky, and the stream too rapid, for navigation even by native craft.

The coast trends about E. by N. for 11 miles from False Point Divi and then turns to the northward, forming a bay as far as point Divi. It is low and monotonous, with a sandy foreshore and occasional low sand-hills, backed by a fringe of jungle, 30 to 40 feet high.

POINT DIVI, in lat. $15^{\circ} 58' N.$, is about a mile eastward of the eastern mouth of the Kistna river, and is low and sandy, with a little

From Point house the course runs N. 1/2 E. to the entrance of a creek, negligible for boats, then S. 28° E. and south to False Point.

Tides.—It is high water full and change in N. 1/2 E. passage. At the time springs rise 1/2 foot and neaps 1/2 foot. The tides are weak and only felt inshore and at springs.

Backwater.—North of False Point Div. is a considerable backwater. It is formed by a long spit, which commences 1/2 mile north of False Point Div. extends 1 mile northward, enclosing a sheet of water half a mile broad, and having an entrance in the south end. This backwater is connected by creeks with the Kistna river.

FALSE POINT DIV. in lat. 15° 47' N. long. 80° 50' E. bears S. 41° E. distant 1 1/2 miles from N. 1/2 E. passage. The entrance is low and dangerous, and covered with sand, mangroves, jungle, and shoal ground, which extends in points one in the south and 3 miles West of the point.

Caution.—The distance from lat. 15° 47' north and the 100-fathom line 1/2 miles from the coast, the top of the rock being just visible from the 100-fathom line. As the soundings decrease rapidly from the 100-fathom line vessels in this neighborhood should keep the lead going and not approach nearer than 100 fathoms.

Currents.—The current off False Point runs to the west, according to the moon, and parallel to the shore, being strongest towards the 100-fathom line.

Kistna river is a large stream for navigation, the mouth is too shallow to admit a ship, there being no current and the river channel is generally too rocky and the stream too rapid for navigation even by native craft.

The coast trends about E. 1/2 N. for 11 miles to N. 1/2 E. Point Div. and then turns to the S. 1/2 E. and then to the S. 1/2 W. Point Div. is low and dangerous, with a sandy beach, and is occasionally low sand-banks, except for a narrow channel 30 to 40 feet high.

POINT DIV. in lat. 15° 47' N. long. 80° 50' E. is a small rocky point, in the mouth of the Kistna river, and is a small sandy spit with a little

scrub. Depths less than 3 fathoms extend nearly 2 miles from the point, and there are only 5 fathoms 4 miles off. p. 135.

Position.—Point Divi lighthouse is in lat. $15^{\circ} 59' 12''$ N., long. $81^{\circ} 7' 38''$ E.

Erase paragraph beginning **Caution**.

p. 136.

MASULIPATAM.*—The Port office is near the flagstaff, which is 112 feet high. The fort is now only the name of the locality near the flagstaff. The town is situated in a low unhealthy plain, swampy in the rainy season, and deep with sand during the remainder of the year. The entrance to the canal is near the fort.

Buoys.—The buoys have been moved; the northern one now lies in a depth of 22 feet at low water with the flagstaff bearing S. 88° W., the southern one in a depth of 24 feet at low water with the flagstaff bearing N. 76° W.

Tides.—It is high water, full and change, at Masulipatam at 9h. 15m.; springs rise about $5\frac{1}{4}$ feet, neaps about $3\frac{1}{4}$ feet.

Anchorage is eastward of the buoys in $3\frac{1}{2}$ to 5 fathoms, with the flagstaff bearing about West.

Erase paragraph beginning **Caution**.

p. 137.

DIRECTIONS.—After rounding point Divi the fort flagstaff will be seen, and soon afterwards the clumps of trees described below.

Remarkable clumps.—Some clumps of casuarinas are the only remarkable objects on the coast between False Point Divi and the Vanteyam Godáviri. The two southern clumps, situated about three-quarters of a mile northward of Masulipatam river mouth, are long and wedge-shaped with their highest parts at the northern extremities. About $3\frac{1}{2}$ miles further northward is a small pointed clump, and rather more than a mile north of that, and close to the coast, is North clump. This last is a large and very compact clump of casuarinas, about 60 feet high, and often appears like an island, the trees northward and southward of it being of a lighter colour.

Obelisk.—An obelisk, about 18 feet high, stands on a sand-hill about a mile N.N.W. of the southern casuarina clump, but it is not conspicuous from seaward.

* See plan of Masulipatam roads on chart, No. 1,894.

sample. Depth less than 5 fathoms (and nearly 5 miles from the point) and there are only 5 fathoms 1 mile off.

Position.—Depth 400 fathoms is on Jan. 15, 1907, N. 100° E. 17' 30" E.

Always paragraph best under **Canton**.

MASULIPATAM.—The town office is near the fort, which is 112 feet high. The fort is now only the ruin of the locality near the bastion. The town is situated in a low undulating plain, except in the rainy season, and deep with sand during the remainder of the year. The entrance to the canal is near the fort.

Bay.—The bay has been named the northern one, now lies in a depth of 32 feet at low water with the light bearing $S. 82^{\circ} W.$ the southern one in a depth of 24 feet at low water with the light bearing $N. 75^{\circ} W.$

Tides.—It is high water, full, and changes at Masulipatam at 10.15 a.m.; springs rise about 5 feet, neaps about 3 feet.

Anchorages.—is eastward of the bay in 3 to 5 fathoms with the light bearing about $W. 80^{\circ}$.

Always paragraph best under **Canton**.

DIRECTIONS.—After rounding point Divi the fort Masulipatam will be seen, and soon afterwards the clump of trees described below.

Remarkable clumps.—Some clump of casuarinas are the only remarkable objects on the coast between Ellice Point and the Mangrove (Goswin). The two remarkable clumps situated about three quarters of a mile north and of Masulipatam river mouth are long and wedge-shaped with their highest point at the northern extremity. About 3 miles further northward is a small pointed clump, and further more than a mile north of that and close to the coast is North clump. This last is a large and very compact clump of casuarinas about 60 feet high and other appears like an island. The trees northward of it southward of it being of a darker colour.

Obelisk.—An obelisk about 18 feet high stands on a sand-hill about a mile $N. W.$ of the southern casuarina clump, but it is not conspicuous from seaward.

* The place of Mangrove trees is about $N. 20^{\circ} E.$

River mouth.—The depth on the bar is about one foot during the dry season. p. 137.

Weather.—During October, November and December boats are occasionally unable to cross the bar and communicate with the shipping, but this is not of frequent occurrence.

THE COAST between Masulipatam and Narsapur point is p. 139. thickly wooded for the southern 8 or 9 miles, the trees are then more scattered for about 10 miles, and afterwards thicker to Narsapur point.

Obelisk.—An obelisk, about 25 feet high, and not very conspicuous, is situated on the coast about 11 miles northward of Masulipatam.

NARSAPUR POINT is on the eastern side of the entrance to the Narsapur or Vasishta Godáviri, and bears N.E. by E., distant 38 miles from point Divi. The least depth on the bar is about 7 feet at low water, with 2 to 3 fathoms inside. Narsapur town is about 8 miles up the river, and its trade has almost ceased. There is a post and telegraph office at the town, and a few fresh provisions can be obtained at a moderate cost.

Position.—The obelisk on Narsapur point is in lat. $16^{\circ} 18' 48''$ N., long. $81^{\circ} 43' 17''$ E.

Currents.—In January and February the current at 8 to 10 miles off Narsapur point and Vanteyam Godáviri runs in a westerly direction, with a greatest rate of 2 knots. In the bay westward of Narsapur point the current is weak and irregular, while in March, off point Divi, it was found running to the eastward with a rate of $1\frac{1}{2}$ knots.

HOPE ISLAND LIGHT is visible from N. 5° E., through north and west, to S. 5° W. It is proposed to remove this light-house to be erected on Thirthalmundi, 8 miles to the southward. p. 141

Buoy.—The buoy north-eastward of Godáviri point has been altered to a *pillar* buoy, painted black. p. 142.

Tides.—It is high water, full and change, at Coconada at 8h. 50m. p. 143.

For Wattara, read Wathara; and for Rambhid Quoin, read Rambhil Quoin. p. 143.

River mouth.—The depth on the bar is about one foot during the dry season. p. 137.

Weather.—During October, November and December boats are occasionally unable to cross the bar and communicate with the shipping, but this is not of frequent occurrence.

THE COAST between Maschigamun and Narsapur point is p. 138. thickly wooded for the southern 8 or 9 miles, the trees are then more scattered for about 10 miles, and afterwards thicker to Narsapur point.

Obelisk.—An obelisk about 25 feet high, and not very conspicuous, is situated on the coast about 11 miles northward of Maschigamun.

NARSAPUR POINT is on the eastern side of the entrance to the Narsapur or Vashina Gobiari, and bears N.E. by E. distant 38 miles from point Divi. The least depth on the bar is about 1 foot at low water with 2 to 3 fathoms inside. Narsapur town is about 2 miles up the river and its trade has almost ceased. There is a post and telegraph office in the town, and a few fresh provisions can be obtained at a moderate cost.

Position.—The obelisk on Narsapur point is in lat. $6^{\circ} 18' 45''$ N., long. $81^{\circ} 12' 17''$ E.

Current.—In January and February the current at 8 to 10 miles off Narsapur point and Vashina Gobiari runs in a westerly direction with a greatest rate of 2 knots. In the bay westward of Narsapur point the current is weak and irregular, while in March, off point Divi, it was found running to the eastward with a rate of 1½ knots.

HOPE ISLAND LIGHT is visible from N. 75° E. through north and west to $2^{\circ} 57' W.$ It is proposed to remove this light to a light-house to be erected on Thirithamudi, 2 miles to the southward. p. 141.

Booy.—The buoy northward of Gobiari point has been p. 142 altered to a yellow buoy, painted black.

Tides.—It is high water full and changing at Cochin at 8½, 500 a. p. 146 For *Wular, Wad, Wadhar, and for Ramphid Quoin, read p. 146* Ramphid Quoin.

Tides.—It is high water, full and change, at Vizagapatam at p. 150
8h. 26m.

For Upada read Opada.

p. 151.

Currents, &c.—During the months of January, February, March and April, between Sacramento shoal and Bimlipatam, a current runs steadily to the north-eastward at a short distance from the shore ; in the neighbourhood of Sacramento shoal its velocity is greatest, being sometimes as much as 4 knots at a distance of 5 miles from the shore ; between Coconda and Bimlipatam its distance from the shore is greater and its velocity less, in shore of the current slack water is generally found, but sometimes close in shore the action of the tides will be experienced.

LIGHT.—**Kalingapatam.**—For alterations and intended p. 155.
alterations, *see* Light List ; Notice was given in January 1894 that the intended alterations in the light were indefinitely postponed.

Buoys.—The buoys in False point anchorage are now painted in accordance with the Uniform System of Buoyage adopted in India in 1892, that is, the fairway buoy is painted black and white in horizontal stripes, and, entering from seaward, starboard hand buoys are painted red, and port hand buoys black.* pp. 170, 171.

Tides.—It is high water, full and change, at False point anchorage p. 171.
at 9h. 18m.

Palmyras buoy has disappeared and will not be replaced.

p. 174.

Buoys.—The buoyage of Dhamra and Baitarani rivers up to Chandbali is now in accordance with the Uniform System of Buoyage adopted in India in 1892. Kanika buoy, and H buoy at the entrance to South channel, are as given in Bay of Bengal Pilot, 1892. The river above Shortt island is marked by black buoys surmounted by cylinders on the port hand, entering from seaward ; and by red buoy surmounted by triangles on the starboard hand ; the inner bar buoys and those above to Chandbali have no topmarks. G, E, and C buoys have been withdrawn, and in lieu of them a black buoy marks the north-west extreme of Shortt island shoals, a red buoy the northern side of the channel southward of the old position of E buoy, and a red buoy the northern side of the channel southward of the old position of C buoy.† pp. 176-179.

* *See Admiralty plan :—False point anchorage, No. 755.*

† *See chart, No. 754.*

Tides.—It is high water full and change at Vinsagpattan at p 150
at 50m.

For Tides see Op. 151.

Currents. &c.—During the month of January, February, March and April between Saramang and Bilibidjan, a current runs steadily to the north-west at a short distance from the shore; in the neighbourhood of Saramang the velocity is greatest, being sometimes as much as 4 knots at a distance of 5 miles from the shore; between Coronda and Bilibidjan its distance from the shore is greater and its velocity less; in shore of the current slack water is generally found, but sometimes close in shore the action of the tides will be experienced.

LIGHT.—Kalinagpattan.—For alterations and intended alterations see Light List: Notice was given in January 1894 that the intended alterations in the light were indistinctly positioned.

Boys.—The boys in Fair Point anchorage are now painted in accordance with the Uniform System of Buoyage adopted in India in 1892, that is, the fairway buoy is painted black and white in horizontal stripes, and entering from seaward, standard hand buoys are painted red, and port hand buoys black.

Tides.—It is high water full and change at Fair Point anchorage at 151m.

Plinyas buoy has disappeared and will not be replaced.

Boys.—The buoys of Binnang and Binnang rivers up to Binnang are now painted in accordance with the Uniform System of Buoyage adopted in India in 1892. Black, white, and red buoys in the entrance to South China Sea are given in List of Binnang River 1892. The river above Binnang is marked by black buoys surrounded by cylinders on the port hand, entering from seaward; and by red buoys surrounded by cylinders on the starboard hand; the inner bar buoys and the outer bar buoys are marked by black buoys and black buoys; and the outer bar buoys are marked by black buoys and black buoys. The north-west entrance of Binnang shows a red buoy, the northern side of the channel, south-west of the old position of Binnang, and a red buoy, the northern side of the channel, south-west of the old position of Binnang.

of the old position of Binnang.

The positions of the remainder of the buoys are unchanged, the p. 178. only alterations being in colour as necessary.*

North channel is closed to navigation.

Buoys.†—The buoys at the entrance to Balasor (Burabalang) p. 182. river are now in accordance with the Uniform System of Buoyage adopted in India in 1892. Anchorage buoy is, as before, black with staff and cage; the next buoy, entering from seaward, is red and surmounted by a triangle; the next, a *barrel* buoy, black and surmounted by a cylinder; and the last, inner bar buoy, a red *nun* buoy. From these buoys the bearing and distance of Chandipur flagstaff is as follows, respectively: Anchorage buoy N.W. by W. $3\frac{1}{10}$ miles; W.N.W., $2\frac{1}{10}$ miles; N.W. by W. $\frac{7}{8}$ W. $1\frac{5}{10}$ miles; and W. $\frac{1}{2}$ N., $1\frac{2}{10}$ miles.

Tides.—It is high water, full and change, at Eastern channel p. 188. light vessel at 8h. 43m.

GASPAR CHANNEL.—In the beginning of 1894, the least p. 194. depth in the fairway of Gaspar channel was 16 to 17 feet at low water, on a bar formed between Middleton sand and Lower Long sand.

Great changes had taken place in the sands at the entrance of the Hugli, amongst others a channel with a depth of 20 feet at low water, had opened up between Lower and Upper Long sands. The charts of the locality cannot be depended upon.

Buoys.—The buoyage of the Hugli is now in accordance with the Uniform System adopted in India in 1892; that is, entering from seaward, starboard hand buoys are red, surmounted by a black staff and triangle; port hand buoys are black, surmounted by a black staff and cylinder; fairway buoys are black and white in horizontal stripes.

Tides.—It is high water, full and change, at Calcutta at 2h. 2m. p. 199.

Docks.—The Port Commissioner's dock at Kidderpur is 520 feet in length on the blocks, and has a depth on the sill of 25 feet.

LIGHT.—The duration of the flash of Kutabdia light is *six* p. 217. *seconds*, greatest intensity during *two seconds*. The *blue* light has been discontinued.‡

* Port officer, Chandbali, 1893; see Admiralty plan :—Dhamra river, No. 754.

† See Admiralty plan :—Balasor road and river on sheet No. 239.

‡ See Admiralty chart :—Mutlah river to Elephant point, No. 859.

Buoys.—An iron, black, *spar* buoy, surmounted by a white staff and cage diamond, has been placed in 7 fathoms at low water, near the southern end of South Patches, and about 3 miles southward of the buoy marking the centre of the patches. This buoy was washed away in 1893. p. 217.

LIGHT.—**Norman point.**—In the north-east monsoon, this light is occasionally obscured, or shows *red*, owing to small fog banks or thick mists.* p. 219.

Buoys.—The buoys at the entrance of Chittagong (Karnafuli) river have been altered in accordance with the Uniform System of Buoyage adopted in India in 1892, that is, entering from seaward, starboard hand buoys are red and port hands buoys black. p. 221.

It is high water, full and change, at Chittagong at 1h. 12m., and at Kutabdia island at 11h. 56m.

Maya river.—The entrance is buoyed in the fine season, but the river is only available for vessels of light draught. p. 230.

Buoy.—The colour of the buoy moored southward of Oyster reef has been altered to black.† p. 231.

Fakir point.—The *fixed white* light, previously shown from a flagstaff on this point, has been discontinued.‡ p. 232.

Buoys.—The buoys marking the channel to Akyab are now in accordance with the Uniform System of Buoyage adopted in India in 1892, that is, starboard hand buoys, entering from seaward, are red ; port hand buoys black. pp. 233, 234.

Tides.—It is high water, full and change, at Akyab at 9h. 37m. p. 233

Borongo island.—The beacon on Prine Daung has been painted and the surrounding jungle cleared. It should therefore be distinctly seen from seaward. p. 235.

Coal.—There was no coal at the depôt in Lembalai bay in 1893, it having been all removed to Olehléh. p. 259.

PULO WAI.—**Coal.**—The Dutch Government is establishing a coal depôt in Prialaut bay, on the north side of Pulo Wai. When the arrangements are completed, this will supersede Olehléh as the coaling place of northern Sumatra.§ p. 262.

* See Admiralty plan :—Chittagong river, No. 84 ; also, No. 859.

† See Admiralty chart :—Elephant point to Cheduba strait, No. 821.

‡ See Admiralty plan :—Arakan river, with plan of Akyab, No. 1,884.

§ See Admiralty chart :—Acheh head to Diamond point, No. 219.

LIGHT-NORMAL Projected in the normal position, this light is essentially as shown, excepting to slight fog tanks or back mist.

[illegible]

located on the point has been abandoned. The way was then probably shown from a point

Fig. 9. Dependence of the rate of formation of α -D-glucose on pH.

from their society, and the more they are involved, the more they will enjoy it. The more they are involved, the more they will enjoy it. The more they are involved, the more they will enjoy it.

1984-1994 in 1st period of topological invariants of $\mathbb{P}^1$ - 1803

It is a well-known fact that the only way to ensure the security of a system is to keep it as simple as possible. The more complex a system is, the more vulnerable it is to attack. Therefore, the only way to ensure the security of a system is to keep it as simple as possible.

[illegible]

OLEHLÉH is connected by telegraph with Kota Rajah, and has p. 264. thence communication with all parts of the world. There is a large hospital at Kota Rajah.

Coal.—In 1893 about 7,000 tons of Welsh coal was in stock at Olehléh, but vessels could not coal alongside a wharf or pier. *Delete.*—"The Dutch coaling station is in Lembalei bay, see page 259."

Tides and Currents.—The Italian vessel-of-war *Fasana* p. 267. experienced, in February 1893, at 6 to 8 miles eastward of Kar Nicobar, a current or tidal stream, setting south-west, at the rate of 7 miles an hour, the tide at the time being one-quarter ebb.

THE ARCHIPELAGO.—The *Mayo* found good anchorage, p. 294. nearly landlocked, at the south end of the passage westward of Clebrook island, at about $1\frac{1}{2}$ cables southward of the south-west point of that island, in a depth of 8 fathoms.* This anchorage is suitable for steam-vessels in both monsoons.

Kwangtung strait.—The *Mayo* passed through Kwangtung p. 295. strait in November 1894 and obtained depths upwards of 12 fathoms in mid-channel throughout. A steam launch at the same time found a depth of 6 fathoms on the eastern side northward of the narrows. A rock is reported to exist in the strait, by the Andamanese, but its locality is not known.*

Rong at inlet.—The *Mayo* anchored here in a depth of p. 297. 5 fathoms, with North Button bearing S. 32° E., and Rong at point (east extreme south entrance point) S. 18° W. The anchorage is smooth and convenient in the south-west monsoon. The sunken rocks, shown off the entrance to this inlet in the Admiralty charts, were searched for, but could not be found.*

STEWART SOUND.—The *Mayo* entered Stewart sound north- p. 298. ward of Sound island, passing about a cable northward of Oliver island and the rock westward of it, and obtained a least depth of 4 fathoms.†

The rock on the north side of the passage covers at high water.

* Officer commanding R.I.M.S. *Mayo*, 1894; see Admiralty chart, Long island to cape Blair, No. 1,419.

† See Admiralty chart:—Andaman islands, No. 825.

[illegible]

W. J. W. P. A. Dutch containing section is in (unpublished) part was
 1944-1945, but *possibly* not a *W. J. W. P. A.* Dutch containing section is in (unpublished) part was
 1944-1945, but *possibly* not a *W. J. W. P. A.* Dutch containing section is in (unpublished) part was

1. In 1925, the first of the following operations was carried out:

THE ARGENTINIAN. The Mammals of good abundance are the

location is not known.

[illegible]

† continued

the W and on $\mathbb{R}^n$ is given by

For the general case, let $\mathcal{A} = \{A_1, \dots, A_n\}$ be a family of n subsets of X . Then $\mathcal{A}$ is called *independent* if $\mathcal{A} \cap \mathcal{B} = \emptyset$ implies $\mathcal{A} \cap \mathcal{C} = \emptyset$ for every $\mathcal{C} \subseteq \mathcal{A}$. If $\mathcal{A}$ is not independent, then $\mathcal{A}$ is called *dependent*. A family $\mathcal{A}$ is called *maximal independent* if $\mathcal{A} \cup \{A\}$ is dependent for every $A \in \mathcal{A}^c$. The *rank* of $\mathcal{A}$ is the cardinality of a maximal independent subfamily of $\mathcal{A}$.

Preparis island.—The Master of the tug *Ajar* of Rangoon p. 312. reports having recently seen a pinnacle rock, with a depth of about 9 feet on it, lying about 2 miles eastward of the north end of Preparis island, or approximately in lat. $14^{\circ} 54\frac{1}{2}'$ N., long. $93^{\circ} 42'$ E. ||

Buoys.—The buoyage of Bassein river is now in accordance with p. 318. the Uniform System adopted in India in 1892, that is, entering from seaward, starboard hand buoys are painted red; port hand buoys, black; and the fairway buoy, black and white in horizontal stripes.*

Baragua flats—Proposed LIGHT-VESSEL.—The proposed, p. 321. light-vessel (for particulars see Light List, part VI., 1895, No. 210a) to be placed southward of Baragua flats, in approximately lat. $15^{\circ} 29' 15''$ N., long. $95^{\circ} 11' 30''$ E., will not be established until about June, 1896.†

KRISHNA LIGHT-VESSEL.—The permanent light-vessel was replaced at her station on 16th December 1894, and the temporary light-vessel withdrawn.

Krishna shoal light-vessel light is a *group-flashing white* light showing *two flashes* in quick succession *every thirty seconds*, thus :—flash, *one and three-quarter seconds*; eclipse, *four seconds*; flash, *one and three-quarter seconds*; eclipse, *twenty-two and a half seconds*.

For further details see List of Lights, part VI., 1895, No. 211.

Shoal.—The Master of the steamer *Vita* reports that, at 6 a.m. 14th December 1893, he obtained a sounding of 11 feet at low water springs, in a position with Krishna light-vessel bearing N.E. $\frac{1}{4}$ N., distant 6 miles; or approximately in lat. $15^{\circ} 31\frac{1}{4}'$ N., long. $95^{\circ} 30\frac{1}{4}'$ E.† This shoal was afterwards unsuccessfully searched for by the R.I.M.S. *Dalhousie*, but as the position of the shoal is somewhat doubtful, the search did not cover a sufficiently large area to disprove its existence. Pending further information it has therefore been retained on the Admiralty charts.

Least depth in fairway.—In the channel northward of Hastings p. 324. shoal the depth was only 10 feet in February 1893. This however gives ample water for the draught given in Bay of Bengal Pilot, viz. 26 feet, as able to reach Rangoon in the dry season.‡

|| See charts. No. 825, 823, 152.

* See Admiralty chart :—Bassein river and approaches, No. 834.

† See Admiralty charts, Nos. 70, 830 and 823.

‡ See Admiralty plan :—Rangoon river, &c., No. 833.

24. *Journal of the American Medical Association*

The *Journal of the American Medical Association* is a weekly publication of the American Medical Association, published in Chicago, Illinois. It is one of the largest and most influential medical journals in the world. The journal covers a wide range of topics, including clinical medicine, public health, and medical education. It is known for its high quality of research and its commitment to providing up-to-date information to its readers. The journal is published in English and is available in both print and electronic formats.

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SPIT LIGHT-VESSEL is now moored in a depth of 25 feet p. 325.
at low water, with Eastern Grove lighthouse bearing N. 17° E.,
distant $3\frac{2}{10}$ miles; and Elephant point obelisk N. 45° W.

WESTERN CHANNEL.—In 1894 a new channel, named Spit p. 328.
channel, was found to have opened out in the northern part of
Western channel. The new channel is half a mile wide and carries
a depth of 21 feet at low water springs, with the exception of a small
patch of 18 feet, which lies nearly in mid-channel, with Elephant
point obelisk bearing W. by N. $\frac{1}{4}$ N., distant $1\frac{7}{10}$ miles; and Grove
point beacon N.N.E. $\frac{3}{4}$ E.

The western side of Spit channel is marked by three buoys.

Lower Spit buoy (black *can*) has been moved to the north-westward
and now lies with Elephant point obelisk bearing N.N.W. $\frac{1}{2}$ W.
(N. 28° W.), distant $3\frac{2}{10}$ miles; and Eastern Grove lighthouse N.N.E.
(N. 23° E.).

Spit Tongue buoy is a black *can* buoy, surmounted by a staff and
cylinder, moored with Elephant point obelisk bearing N.W. $\frac{1}{2}$ W.
(N. 50° W.), distant $2\frac{2}{10}$ miles; and Eastern Grove lighthouse,
N.N.E. $\frac{3}{4}$ E. (N. 31° E.).

Upper Spit buoy (black *can*) has been moved to the south-south-
westward and is now moored with Elephant point obelisk bearing
N.W. by W. $\frac{1}{2}$ W. (N. 63° W.), distant nearly $1\frac{2}{10}$ miles; and Eastern
Grove lighthouse N.E. $\frac{3}{4}$ E. (N. 49° E.).

The eastern side of Spit channel is marked by four buoys.

Upper Eastern buoy (*conical* red) has been moved to the
westward, and now lies with Elephant point obelisk
bearing N.W. (N. 45° W.), distant nearly $3\frac{1}{2}$ miles; and
Eastern Grove lighthouse N. by E. $\frac{1}{2}$ E. (N. 13° E.).

Lower Spit Middle Ground buoy is painted black and white
in horizontal stripes, surmounted by staff and globe, and
moored at the southern end of Middle ground, with
Elephant point obelisk bearing N.W. $\frac{1}{4}$ W. (N. 48° W.),
distant 3 miles; and Eastern Grove lighthouse N. by E. $\frac{1}{2}$ E.
(N. 17° E.).

Upper Spit Middle Ground buoy is painted black and white in
horizontal stripes, surmounted by a staff and globe, and
moored at the northern end of Middle ground, with
Elephant point obelisk bearing N.W. $\frac{1}{8}$ W. (N. 55° W.),
distant $2\frac{7}{10}$ miles; and Eastern Grove lighthouse
N. by E. $\frac{1}{8}$ E. (N. 21° E.).

See chart. No. 833.

Upper Ridge buoy (red) has been moved about half a cable to the south-eastward. p. 328

Centre spit (Spit Fairway) buoy (black and white in horizontal stripes), and West Lump buoy (black), have been withdrawn. p. 329.

Liffey sand.—A black *can* buoy has been moored in a depth of about 24 feet at the south end of Liffey sand, with Choki point beacon bearing E. by N., distant three-quarters of a mile; and Danot pagoda South.

DIRECTIONS.—The depth in the fairway of Western channel was reported to be only 16 feet at low water springs between Centre western and Upper western buoys in February 1893.* p. 330.

Eastern Grove light and Spit light-vessel light in line lead about a cable westward of Lower eastern buoy (red). With the flood stream Eastern Grove lighthouse should be kept open westward of Spit light-vessel.

Owing to the changes that have taken place, the directions given, in Bay of Bengal Pilot, for navigating the channel between Lower and Upper Spit buoys, are obsolete. Strangers are recommended to take a pilot.

Time Signal has been established on the tower of the Mayo Sailors' Home. It consists of a ball, which is hoisted close up as preparatory every day, except Sunday, at 11h. 55m. 0s., and dropped at noon, Rangoon mean time, equivalent to 17h. 35m. 20s. Greenwich mean time. A gun is also fired. Should the signal fail the ball will be dropped again at 1h. 0m. 0s. Rangoon mean time. p. 333.

Southern Moskos.—There is said to be good anchorage, in bad weather, southward of the small island, off the middle of the east side of the largest Southern Moskos island.† p. 367.

THE COAST.—The Government bungalow in lat. 14° 8' N. is a telegraph station.‡ p. 368.

Communication.—Tavoy is connected with the telegraph system of India, *via* Moulmein. p. 370.

Port Owen.—There is a Missionary station here.‡ p. 376.

* Lieutenant (N) John A. Tuke, H.M.S. *Boadicea*. See chart. No. 833.

† See Admiralty chart :—White point to Mergui, No. 824.

‡ See Admiralty plan of port Owen on sheet, No. 835.

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Beacons, &c.*—In May 1894 the state of the beacons in the approaches to Mergui was as follows :— pp. 381-384.

The undermentioned five beacons had been destroyed—

The leading beacon, named Tree Pagoda.

Approximate position, lat. $12^{\circ} 26' 40''$ N., long. $98^{\circ} 35' 30''$ E.

Both the Eastern and Western beacons at the northern entrance to the harbour.

The flagstaff in front of the Deputy Commissioner's house.

The beacon in Fell passage near Pigalé islet.

Approximate position Pigalé islet, lat. $12^{\circ} 23'$ N., long. $98^{\circ} 25\frac{1}{2}'$ E.

The beacon on the east side of the channel, north-westward of Kalwin point, was replaced in January 1895.

Approximate position, lat. $12^{\circ} 29' 30''$ N., long. $98^{\circ} 35' 30''$ E.

The Basket beacon N.N.W. $\frac{1}{2}$ W. (N. 25° W.) 9 cables from Tree Pagoda is entirely hidden by trees.

Depths.—In March 1893, the depth eastward of Round island, entrance to Pak Chan river, was only about 3 fathoms at low water.† p. 402.

Goh Phi.—Light and buoy.—At the same date as above Goh Phi buoy was not in position. The light at Goh Phi is only shown occasionally.†

Shoal.—A shoal, with a depth of $2\frac{1}{2}$ fathoms on it, lies in the fairway of Puket harbour, with the east extreme of Goh Tapanjai bearing S.S.E., distant $3\frac{1}{2}$ cables.‡ p. 417.

* See Admiralty plan :—Mergui harbour, No. 218 ; also, Nos. 824 and 216a.

† See Admiralty chart :—Mergui archipelago, No. 216b.

‡ See Admiralty plan :—Puket or Tongka harbour, No. 843.

Hydrographic Office,

Admiralty,

London,

March 1895.

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